

Area Boiler Emission Limits

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To Protect and Enhance Kentucky's Environment



Outline of Presentation

- What pollutants have emission limits
- Which boilers need to test
- How the testing must be done
- Alternatives to stack testing
- Actual emission limits
- Frequency of testing
- Operating limits
- Recording and reporting the test results



acronyms

- PM – particulate matter
- Hg – mercury
- CO – carbon monoxide
- POM - Polycyclic organic matter
- CEMS - continuous emissions monitoring system
- COMS – continuous opacity monitoring system



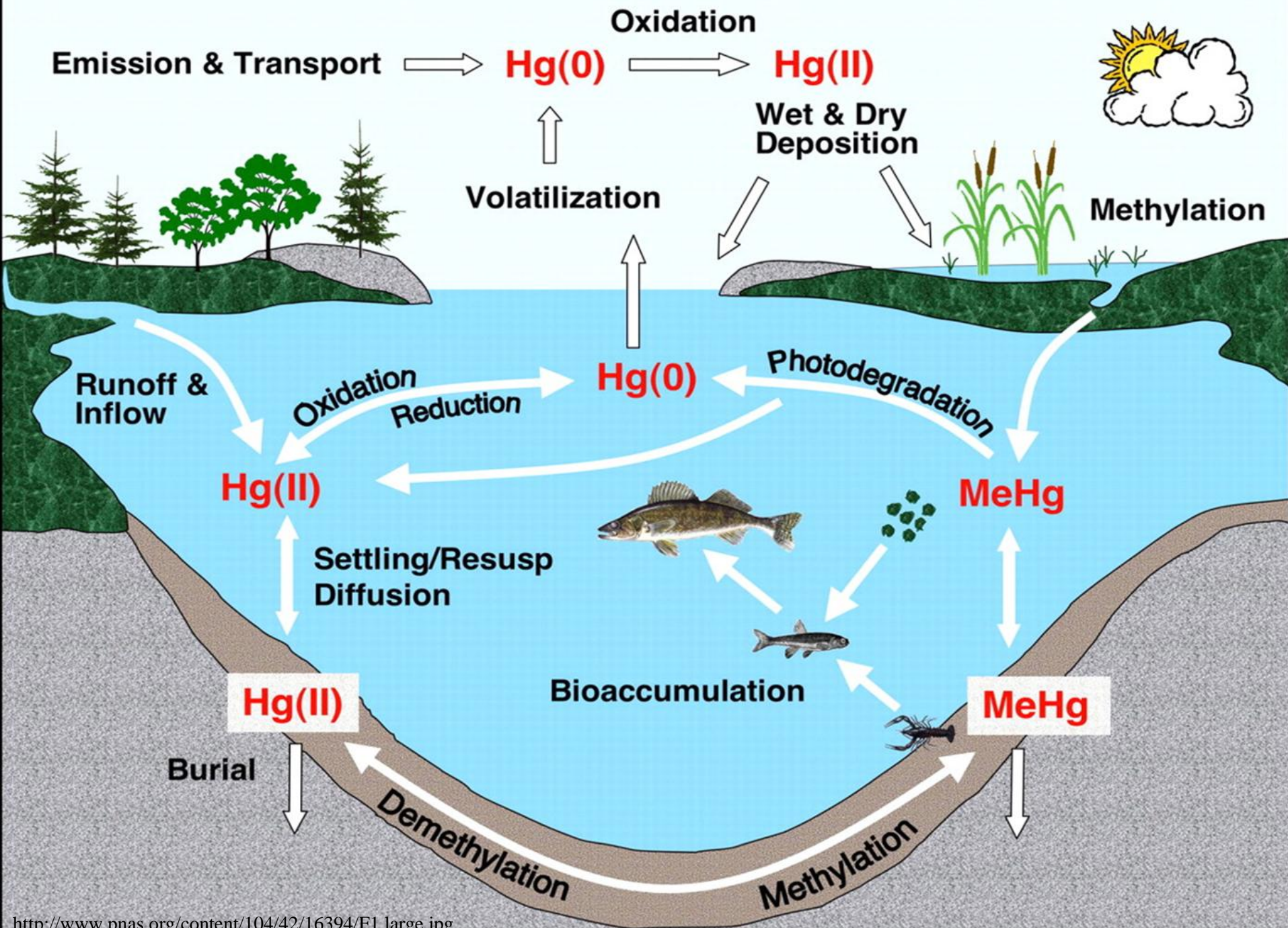
Pollutants that must be tested

- PM – particulate matter (as surrogate for non-Hg HAP metals)

coal fired units

- Hg – mercury
- CO – carbon monoxide
 - (as a surrogate for POM)





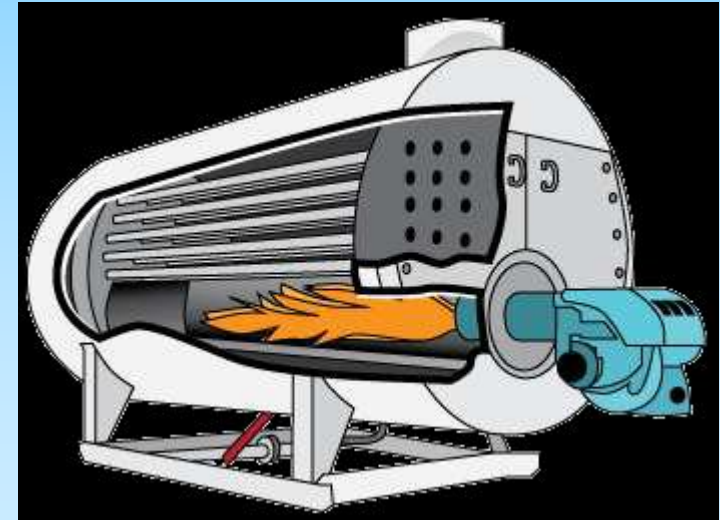
Boilers that must be tested

Coal fired

- “New” large (≥ 10 mmBtu)
 - Must test for PM, Hg, and CO.
- “Existing” large
 - Must test for Hg and CO

Oil fired & Biomass fired

- Only “New” large
 - Must test for PM



Boiler sizes

- “Large” is defined in the rule as boilers with manufacturer rated capacity of 10 MMBtu/hour or greater.
- That’s “Million” Btu; not Mbtu
- That’s about 8,000 lb/hr of steam
- Or just under 300 horse power
- “Small” is less than the above



So, how big is that?

- 300 hp boiler for sale on eBay - \$10K



How testing must be done

- Testing of the emissions from the stack must be conducted using EPA certified test methods
- This requires persons trained and experienced in these methods
- This often means a 3rd party contractor





Alternatives to stack testing

Mercury (Hg)

- Mercury may be “tested” by analyzing the coal to be burned.
- Cost effective alternative to stack testing.
- Your coal supplier may provide this information for you upon delivery.



Alternatives to stack testing

Carbon Monoxide (CO)

- If your boiler has a continuous emissions monitoring system (CEMS) that measures CO in the exhaust gas you may be able to use the data from the CEMS to avoid the need for a CO stack test
- See the text of the rule for details on certifying your CO-CEMS



Alternatives to stack testing

Low sulfur oil option

- New oil-fired units may combust low sulfur oil* as an alternative method of meeting the particulate matter (PM) emission standard.
 - *Low sulfur oil is defined in the rule as containing < 0.5 weight percent of sulfur content in the oil
 - Keep monthly fuel use records



stack testing

- New large coal and new large biomass boilers must stack test for PM
- If the stack test alternatives above are not used then stack testing for Hg and CO are also required
- A site specific stack testing plan and schedule must be submitted 60 days in advance of test day
 - See KY Division for Air Quality form #DEP6028
 - <http://dep.ky.gov/formslibrary/Documents/DEP6028%20Form.doc>



Actual emission limits

| If your boiler is in this subcategory . . . | For the following pollutants . . . | From TABLE 1 of RULE |
|--|---|--|
| 1. New coal-fired boilers with heat input capacity of 30 MMBtu/hr or greater that do not meet the definition of limited-use boiler | a. PM (Filterable) b. Mercury c. CO | 3.0E-02 lb/MMBtu 2.2E-05 lb/MMBtu 420 ppm by volume on a dry basis corrected to 3 percent oxygen (3-run average or 10-day rolling average). |
| 2. New coal-fired boilers with heat input capacity of between 10 and 30 MMBtu/hr that do not meet the definition of limited-use boiler | a. PM (Filterable) b. Mercury c. CO | 4.2E-01 lb/MMBtu 2.2E-05 lb/MMBtu\ 420 ppm by volume on a dry basis corrected to 3 percent oxygen (3-run average or 10-day rolling average). |



Actual emission limits

| | | |
|--|---------------------|--|
| 3. New biomass-fired boilers with heat input capacity of 30 MMBtu/hr or greater that do not meet the definition of seasonal boiler or limited-use boiler | PM (Filterable) | 3.0E-02 lb per MMBtu of heat input. |
| 4. New biomass fired boilers with heat input capacity of between 10 and 30 MMBtu/hr that do not meet the definition of seasonal boiler or limited-use boiler | PM (Filterable) | 7.0E-02 lb per MMBtu of heat input. |
| 5. New oil-fired boilers with heat input capacity of 10 MMBtu/hr or greater that do not meet the definition of seasonal boiler or limited-use boiler | PM (Filterable) | 3.0E-02 lb per MMBtu of heat input. |
| 6. Existing coal-fired boilers with heat input capacity of 10 MMBtu/hr or greater that do not meet the definition of limited-use boiler | a. Mercury b. CO | 2.2E-05 lb per MMBtu of heat input. 420 ppm by volume on a dry basis corrected to 3 percent oxygen. |



Frequency of testing

Compliance demonstrated by stack testing

- Must stack test every three (3) years, and within 37 months of previous test
 - HOWEVER; If your initial PM test results were equal to or less than half the PM limit for your boiler subcategory then no future PM stack testing is required, if you follow all your operating limits and monitoring requirements
 - Your air permit may also require testing



Frequency of testing

Compliance demonstrated by fuel analysis

- Fuel analysis for Hg is required quarterly.
- **HOWEVER**; If your initial Hg fuel analysis results were equal to or less than half the Hg limit for your boiler subcategory then no future fuel analysis is required.
- If you change fuels, or fuel mixtures, then new analysis will be required before burning the new fuel.



Operating limits

All boilers subject to this rule must;

“,,, operate and maintain (the boiler) and associated air pollution control and monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions.”

This is the so-called “general duty” clause



Operating limits

boilers with emission limits must;

“minimize startup and shutdown periods and conduct startups and shutdowns according to the boiler manufacturer’s procedures.”



Biomass boiler



Operating limits

If you are required to demonstrate compliance by stack testing or by installing a continuous monitoring system you must develop a **site-specific monitoring plan** that specifies ranges, set points, calibrations, etc. based on conditions during a passing test. You must then follow that plan and make it available upon request.



Operating limits

All large coal fired boilers must install, operate, and maintain;

- A CO CEMS system for CO and oxygen
- OR
- An oxygen analyzer system if no CO CEMS is used
 - Maintain minimum oxygen levels as established during CO stack testing



Operating limits

All new large boilers (oil, biomass, & coal) with a PM emission limit must;

- Install a Continuous Opacity Monitor (COM) and meet a 10% opacity limit
- OR
- Install a continuous parameter monitor system (CPMS) depending on the type of emission control device used. See Table 3 of the rule.



Example COMS

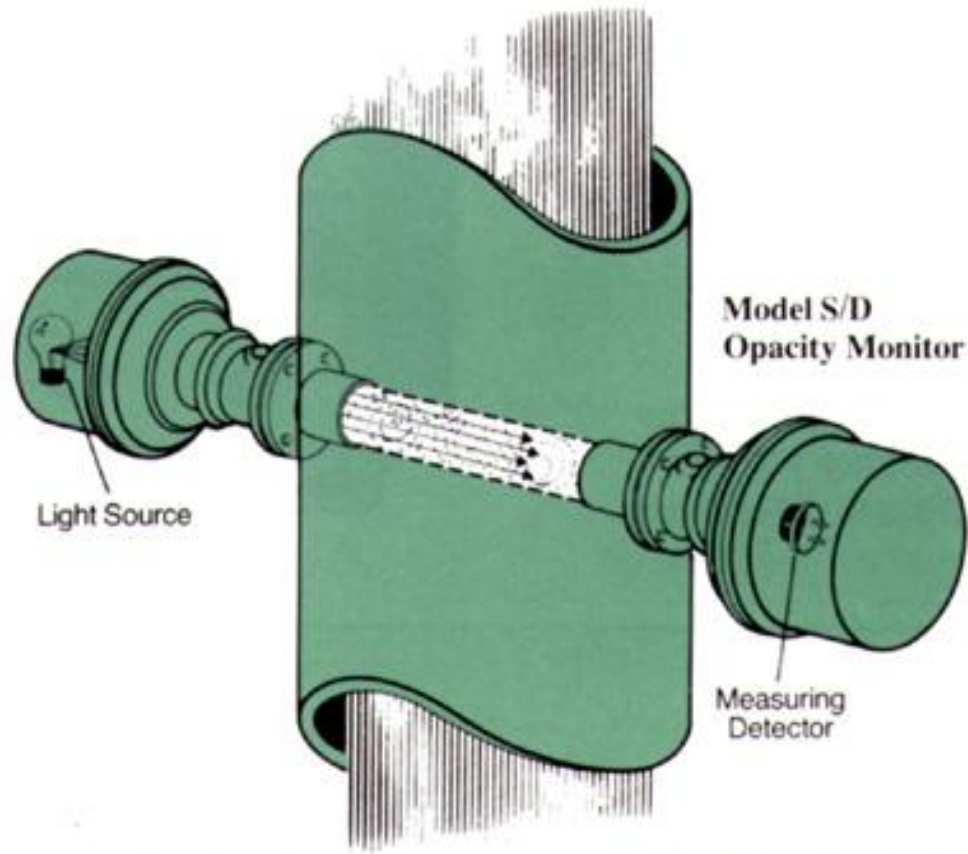
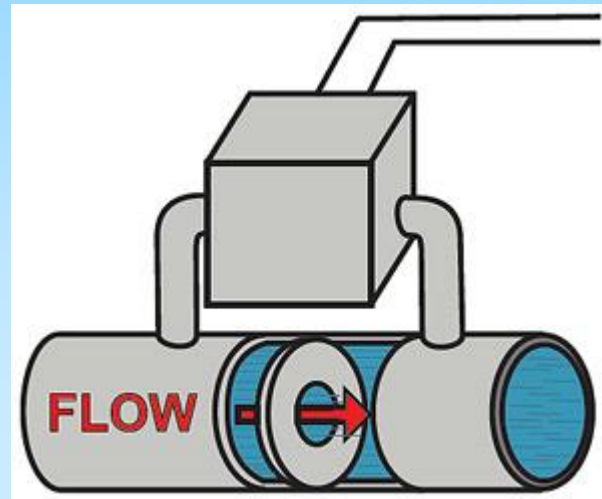


Photo credit: http://www.themcnab.com/Products/AP-VISD/model_apvisd_stack_opacity_monitor_controller.htm



Operating limits

- A continuous parameter monitor system (CPMS) may include bag house pressure monitoring, scrubber flow rate monitoring, or electrostatic precipitator power monitoring.



recordkeeping

- You must keep a copy of each notification and report prepared to comply with this rule. You must also keep all documentation supporting any submitted documents for at least 5 years.
- Records may be “located” on computer servers if available for review onsite.



Reporting of test results

- Test results must be reported electronically to EPA using www.epa.gov/cdx/ Compliance and Emissions Data Reporting Interface (CEDRI)
- Test results must be formatted to the standards set out by EPA's Emissions Reporting Tool (ERT) at <http://www.epa.gov/ttn/chief/ert/index.html>
- support is available Monday through Friday (except on holidays) from 8:00am to 6:00pm (ET).
- The phone number is 888-890-1995.



CEDRI

- The templates for the Area Boiler Rule test results have not yet been set up on the EPA web site.
- Check back with <http://www.epa.gov/boilercompliance/> web page for status of the CEDRI when you are ready to submit results.
- Until then, submit paper copies to EPA and DAQ.



Other reporting

- If you have a Kentucky issued Air Permit, follow your permit required reporting schedule for the boiler rule, as well as all other permit conditions.
- Compliance with your KY Air Permit reporting will mean compliance with the boiler rule.
- KY air permits; six month monitoring reports & Annual Compliance Certifications required



No KY air permit?

- If you do not have an air emission permit issued KY Division for Air Quality, but you have a (small) boiler subject to this new rule then you need to submit the initial notification due **January 20, 2014 for existing boilers**
- **New small boiler** initial notice due within 120 days after startup

